ABSTRACT

The present invention provides a method of operating a fuel cell including an anode, a cathode, a first passage, and a second passage, wherein the anode is disposed in the first passage and the cathode is disposed in the second passage, comprising: producing a non-explosive gaseous feed consisting of (i) at least one oxidizable component having a greater tendency to undergo oxidation relative to the anode, and (ii) a remainder, wherein the remainder is the predominant component in the gaseous feed and consists essentially of water vapor, and introducing the non-explosive gaseous feed to the first passage to form a first gaseous feed stream flowing through the first passage when the anode realizes a temperature effective to facilitate deteriorative oxidation of the anode in the presence of an oxidizing agent. The non-explosive gaseous feed is provided to mitigate or prevent anode oxidation and to mitigate or prevent the formation of potentially explosive gaseous mixtures. Additionally, the non-explosive gaseous feed can provide a source of steam for reforming.

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